

Watershed Evaluations

03050101-180

(Catawba River/Lake Wylie)

General Description

Watershed 03050101-180 (formerly 03050101-190) is located in York County and consists primarily of the **Catawba River flowing through Lake Wylie** and its tributaries. The watershed occupies 45,989 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee-Goldston-Badin series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 10%, with a range of 2-45%. Land use/land cover in the watershed includes: 63.0% forested land, 12.3% agricultural land, 11.2% water, 9.2% scrub/shrub land, 3.0% urban land, and 1.3% barren land.

The Catawba River originates in North Carolina and flows through Lake Wylie into South Carolina in this watershed. Lake Wylie is used for both power generation and recreation. Tributaries draining into and forming arms of Lake Wylie in South Carolina include Catawba Creek, Mill Creek, Crowders Creek (South Fork, South Crowders Creek, Rocky Branch, Brown Creek, Beaverdam Creek, Camp Run), and Torrence Branch. There are a total of 37.1 stream miles and 4,500.1 acres of lake waters in this watershed, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
CW-197	P	FW	LAKE WYLIE ABOVE MILL CREEK ARM AT END OF S-46-557
CW-192	S	FW	SOUTH FORK AT S-46-79 4.5 MI NW OF CLOVER
CW-152	P	FW	CROWDERS CREEK AT US 321 0.5 MI N OF NC STATE LINE
CW-023	P	FW	CROWDERS CREEK AT S-46-564 NE CLOVER
CW-024	W/BIO	FW	CROWDERS CREEK AT S-46-1104
CW-105	S	FW	BROWN CREEK AT UNIMP RD 1.2 MI N OF CLOVER BELOW PLANT
CW-696	BIO	FW	BEAVERDAM CREEK AT S-46-114
CW-153	S	FW	BEAVERDAM CREEK AT S-46-152 8 MI E OF CLOVER
CW-027	S	FW	LAKE WYLIE, CROWDERS CK ARM AT SC 49 AND SC 274
CW-245	W	FW	LAKE WYLIE, CROWDERS CK ARM-1ST PWRLNE UPST MAIN POOL
CW-198	P	FW	LAKE WYLIE, OUTSIDE MOUTH OF CROWDERS CREEK ARM
CW-230	W	FW	LAKE WYLIE AT DAM, UNDER POWERLINES

Lake Wylie - There are five monitoring sites along Lake Wylie, which has a watershed covering 297.9 km² in South Carolina (the majority of the watershed is in North Carolina). The lake has a surface area of 5040.5 hectares, a maximum and mean depth of 28.4m and 6.9m, respectively, and a retention time of 39 days. Aquatic life uses are fully supported at **CW-197**; however there is a significantly decreasing trend in dissolved oxygen and a significant increasing trend in turbidity. There is also a significant decreasing trend in pH. Sediment samples reveal a wide array of pollutants, some occurring at elevated levels compared to other SCDHEC monitoring data. Very high concentrations of chromium were measured in the 1995, 1996, and 1997 sediment samples, and a high concentration was measured in the 1998 sample. Also in sediment, very high concentrations of copper were measured in the 1996, 1997, and 1998 samples,

and a high concentration was measured in 1995. High concentrations of lead were measured in the 1995 and 1996 sediment samples and a very high concentration was measured in 1997. A very high concentration of nickel was measured in 1996, along with a high concentration in 1997. Zinc was found at very high levels in the 1996 and 1997 sediment samples, and was high in the 1998 sample. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported at **CW-027**; however there is a significant increasing trend in five-day biochemical oxygen demand and a very high concentration of zinc measured in 1997. High concentrations of copper were measured in the 1994 and 1995 sediment samples. High concentrations of zinc were measured in the 1994, 1995, and 1997 sediment samples. PCB-1248 was detected in the 1998 sample and P,P'DDT was detected in 1996. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. Both aquatic life and recreational uses are fully supported at **CW-245**.

Aquatic life uses are fully supported at **CW-198**, but there is a significant decreasing trend in dissolved oxygen concentration. In sediment, high concentrations of chromium were measured in the 1994, 1996, and 1997 samples. Also in sediment very high concentrations of copper were measured in the 1994, 1996, 1997, and 1998 samples. A very high concentration of lead was measured in sediment in 1994, and high concentrations were measured in 1996, 1997, and 1998. A very high concentration of nickel was measured in sediment in 1994, and a high concentration in 1996. Very high concentrations of zinc were measured in the 1994, 1997, and 1998 sediment samples, and a high concentration was measured in 1996. Also in sediment, the pesticide malathion was detected in 1994, and P,P' DDE (a metabolite of DDT) was detected in the 1997 sample. Recreational uses are fully supported at this site. Aquatic life and recreational uses are fully supported at the site near the dam (**CW-230**).

Crowders Creek - There are three monitoring sites along Crowders Creek. At the upstream site (**CW-152, in North Carolina**), aquatic life uses are fully supported; however there is a significant increasing trend in total nitrogen concentration. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in turbidity suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions; however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Aquatic life uses are also fully supported further downstream (**CW-023**); however there are significant increasing trends in total phosphorus and total nitrogen concentrations. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the furthest downstream site (**CW-024**), aquatic life uses are partially supported based on macroinvertebrate community data, and recreational uses are partially supported due to fecal coliform bacteria excursions.

South Fork (CW-192) - Aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Brown Creek (CW-105) - Aquatic life uses are fully supported. A significant increasing trend in dissolved

oxygen concentrations and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Beaverdam Creek - There are two monitoring sites along Beaverdam Creek. At the upstream site (**CW-696**), aquatic life uses are fully supported based on macroinvertebrate community data. At the downstream site (**CW-153**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION
LAKE WYLIE TEGA CAY #2 WWTP PIPE #: 001 FLOW: 0.320	SC0026743 MINOR DOMESTIC EFFLUENT
LAKE WYLIE TEGA CAY #3 WWTP PIPE #: 001 FLOW: 0.290 PIPE #: 002 FLOW: 1.00	SC0026751 MINOR DOMESTIC EFFLUENT EFFLUENT
BEAVERDAM CREEK BEAVER CREEK MHP PIPE #: 001 FLOW: 0.015 WQL FOR NH3-N, TRC	SC0032662 MINOR DOMESTIC WATER QUALITY
BEAVERDAM CREEK PHARR YARNS/CLOVER DIV. PIPE #: 001 FLOW: 0.014 PIPE #: 002,003 FLOW: M/R WQL FOR TRC	SC0028321 MINOR INDUSTRIAL WATER QUALITY
BEAVERDAM CREEK TRIBUTARY BOWLING GREEN SPINNING CO. PIPE #: 001 FLOW: 0.0025	SCG250066 MINOR INDUSTRIAL EFFLUENT
MILL CREEK LAKE WYLIE MHP PIPE #: 001 FLOW: 0.09 WQL FOR BOD ₅ , NH3-N, TRC	SC0037605 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Camping Facilities

***FACILITY NAME/TYPE
RECEIVING STREAM***

***PERMIT #
STATUS***

EBENEZER PARK/FAMILY
LAKE WYLIE

46-307-0187
ACTIVE

Mining Activities

***MINING COMPANY
MINE NAME
COMMENTS***

***PERMIT #
MINERAL***

MCCALL GRADING COMPANY, INC.
MCCALL MINE

0926-91
GRAVEL

Land Disposal Activities

Landfill Facilities

***SOLID WASTE LANDFILL NAME
FACILITY TYPE***

***PERMIT #
STATUS***

DUKE POWER CO.
INDUSTRIAL

463303-1601 (IWP-192, IWP-128)
ACTIVE

TEGA CAY 126, INC.
CONSTRUCTION

462436-1201 (CWP-033)
ACTIVE

Water Supply

***WATER USER (TYPE)
STREAM***

***REGULATED CAPACITY (MGD)
PUMPING CAPACITY (MGD)***

CITY OF ROCK HILL (M)
LAKE WYLIE

32.0
18.5

Growth Potential

Residential development along the frontage of Lake Wylie continues to increase, with densest areas located around Tega Cay, River Hills, and the lake shore north of Rock Hill. Residential development away from the lake is scattered, except in the Town of Clover. Commercial development continues to occur in the Lake Wylie Community along S.C. Hwy. 49. Another major land use factor is the Catawba Nuclear Station on the west side of the lake. Transportation projects which will have an impact on future growth include the widened Buster Boyd Bridge and S.C. Hwy. 49, both of which provide improved access into the Charlotte urban area and encourage further residential and commercial growth along the western shore of the lake.

The River Hills development and surrounding areas are now provided with water and sewer services from the City of York to the City of Rock Hill. This reduces the discharge of effluent into the lake, but it encourages more dense development along the lake frontage. The extension of lines will allow most of the frontage in South Carolina to be served with public sewer over the next few years, and

gradually eliminating hundreds of septic tanks. In contrast to the high density development expected along the lake frontage, the western sections of the watershed should continue to have a rural residential character.

Watershed Protection and Restoration

Proposed "No Discharge" Designation for Lake Wylie

The Department is considering prohibiting the discharge of sewage from marine toilets into Lake Wylie. The waters of Lake Wylie are important from an economical and recreational standpoint for both North Carolina and South Carolina. The lake is owned by Duke Power Company of Charlotte, North Carolina. The Company maintains a nuclear station (S.C.), a hydropower station (S.C.), and a steam station (N.C.) on Lake Wylie. The lake is a reliable source of drinking water for the City of Rock Hill, which maintains a water intake. Although present water quality is good, the Department is concerned about the potential for future water quality degradation and believes that measures are needed to insure that present water quality is maintained.

Federal water quality standards prohibit the discharge of untreated sewage into the navigable waters of the United States. But sewage from marine toilets on boats is permitted provided it has undergone some disinfection and treatment. For certain waterbodies, like Lake Wylie, federal regulations allow states to designate them as "no discharge" to prohibit even treated discharges from boats. If the USEPA agrees to the no discharge designation, the Department will require protection beyond the federal minimum standard and all boats with marine toilets would no longer be allowed to discharge treated sewage into the lake. Instead, boats will have to pump-out their holding tanks at one of the two marinas the Department has identified as having pump-out, treatment, and disposal capabilities. In December 1999, the Department approved designating Lake Wylie as a "no discharge zone". There was no opposition during the public hearing process. The designation is now pending before the legislature, which is expected to give it final approval.